

THE DELAWARE^{AND} HUDSON RAILROAD BULLETIN

*"The
D&H"*

MAY 1, 1936

OLD WITCH
HOWE CAVERNS, N.Y.

The Other Fellow's Side

*WHEN you're forming your opinions
Do it carefully—then go slow;
Hasty judgments oft are followed
By regretting—that I know.
And in argument be careful
Not too quickly to deride—
Try to look upon the subject
From the other fellow's side.*

*Ah, if we would but use caution;
Dwell a little less on self;
Think a little more of kindness,
And a little less of pelf;
Try to help the other fellow,
Not to hurt him, don't you see
How much fairer, brighter, better,
This old world of ours would be?*

*Keep the path your mind would travel
Broad and open all the way,
Walk with Wisdom's comrade, Caution,
Heeding all he has to say,
And no matter what arises,
Ere against it you have cried,
Try to look upon the subject
From the other fellow's side.*

—SELECTED.

*"The
D.H."*

The
DELAWARE AND HUDSON RAILROAD
CORPORATION

*"The
D.H."*

BULLETIN

Forsook Farm For Railroad

Retired Conductor Then Worked 52 Years on Delaware and Hudson

BROOM corn and tobacco grew in ranks as "straight as a string" on the present site of our Mohawk (Schenectady) yard in 1862 when ADAM G. BUBB, retired Saratoga-Champlain Division passenger conductor, was born in a brick farmhouse which stood within a stone's throw of the then busy Erie Canal and the spot on which the Delaware and Hudson roundhouse now stands. In fact, the farmhouse was actually demolished to make way for the railroad.

The farmers prided themselves on the perfect alignment of their rows of corn, each trying to outdo the others. A keen-eyed farmer, using a machine planter and a good horse, could sow a row of corn with an uncanny degree of accuracy.

Most farmers also planted an acre or two of tobacco. MR. BUBB'S father, who had forsaken his German farm for an opportunity in America, invariably had a "tobacco patch" somewhere on the property. The seed was first sown in a garden bed, to be transplanted in rows about 2½ feet apart when the sprouts reached the proper size. When mature, in September, the tobacco was cut and allowed to dry until the "January thaw" when it reached the proper state for packing and shipping



ADAM G. BUBB

to cigarmakers in Troy, Schenectady, and other cities. At this stage in the curing process tobacco sold from 12 to 14 cents a pound. A relatively small amount was saved for home use: it was put in boxes to "sweat" until "cured"; then it was fit for use in a pipe or home-rolled cigars.

Could MR. BUBB roll a cigar? "Yes!" he says. "I was 'too young to smoke', but like most young boys I tried it. My own cigars made me so sick I postponed my smoking experiments until I was older."

Many a day he fished in the now-abandoned Troy-Schenectady section of the Erie Canal which ran through his back yard. When two canal boats going in opposite direc-

tions jammed in the narrow channel, the shouts of the drivers could be heard for miles. In summer there were days on which water craft of every description passed the young fisherman. He divided them into two classes: those drawn by mules, which were ordinary canal boats; and horse-drawn craft, which were usually better built and maintained, indicating they belonged to individuals who took pride in them, rather than a forwarding company which was not so particular.

When MR. BUBB was ten years old the family

moved to Niskayuna, where he earned his first wages working by the day in the fields. At sixteen he hired out to a farmer at Pattersonville, ten miles west of Schenectady, for his "room, board, \$12.50 a month, and 'all the chores on Sunday.' "

Forsaking the farm that year, he went to work in the American Locomotive Company plant at Schenectady. In the next three years he rose to the rank of iron heater, preparing the metal for manufacture into engine frames and axles. When 19 he began railroading as a freight brakeman on trains running between West Albany and De Witt (near Syracuse).

In 1884, while Theodore Voorhees was superintendent and S. S. Colton train master, MR. BUBB was hired by Saratoga Division conductor Tom McGee, who had the night freight run between Schenectady and Rutland. Leaving Schenectady at 7:30 P. M., with from 25 to 35 loaded cars, they went to Whitehall, set off all but eighteen loads for the uphill run over the Rutland and Washington, arriving at Rutland at 2 A. M. On the return trip, they were scheduled to leave Rutland at 7 P. M., reaching Schenectady at about 2 A. M.

After six years as brakeman, with an occasional trip as extra conductor, MR. BUBB received a message from superintendent C. D. Hammond telling him to report at Whitehall for service as conductor

during the "ice rush" of the 1889-90 season. Solid 30-car trainloads of ice from Lake Champlain went forward daily to New York via Albany and the New York Central. There were 29 crews in the pool at Whitehall, each making one round trip after another, which gives some idea of the quantity of ice moved.

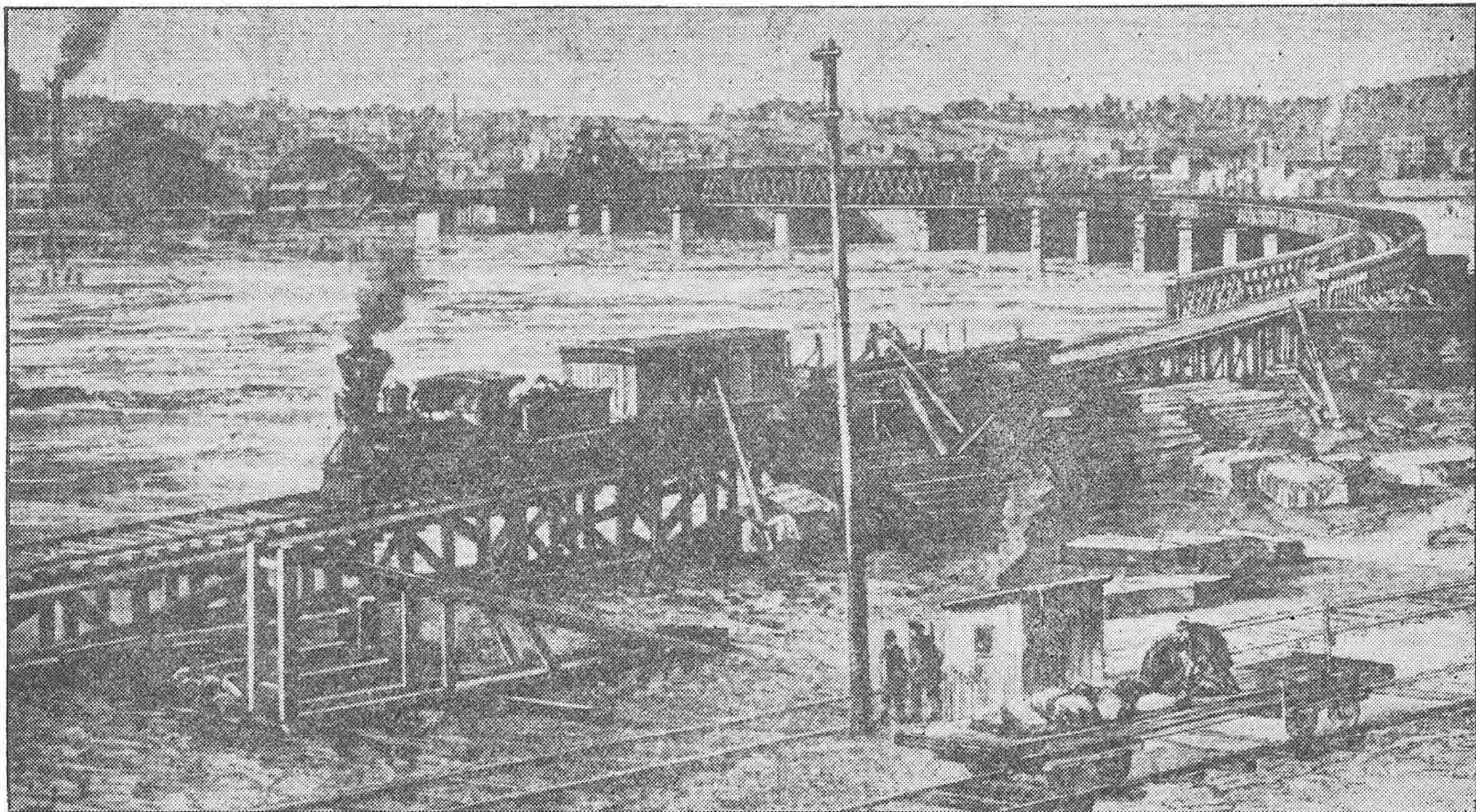
When through fast freight service between Schenectady and Plattsburg was inaugurated, MR. BUBB was assigned to one of those runs. His crew left Schenectady at 4 A. M., reaching Plattsburg at 4 in the afternoon; on the southbound trip they departed from Plattsburg at 4 o'clock the next morning, arriving home at 4 P. M. With a single Mogul-type engine they handled 22 loaded cars over the Champlain Division and 30 cars between Schenectady and Whitehall. MR. BUBB was on that assignment for over twelve years.

In 1902 MR. BUBB entered the passenger service, working on trains running between Schenectady, Saratoga and Lake George. Before the Schenectady-Saratoga trolley line was built there were three crews in this service. Later, for about one year, he was in charge of passenger trains running from Albany and Troy to Lake George.

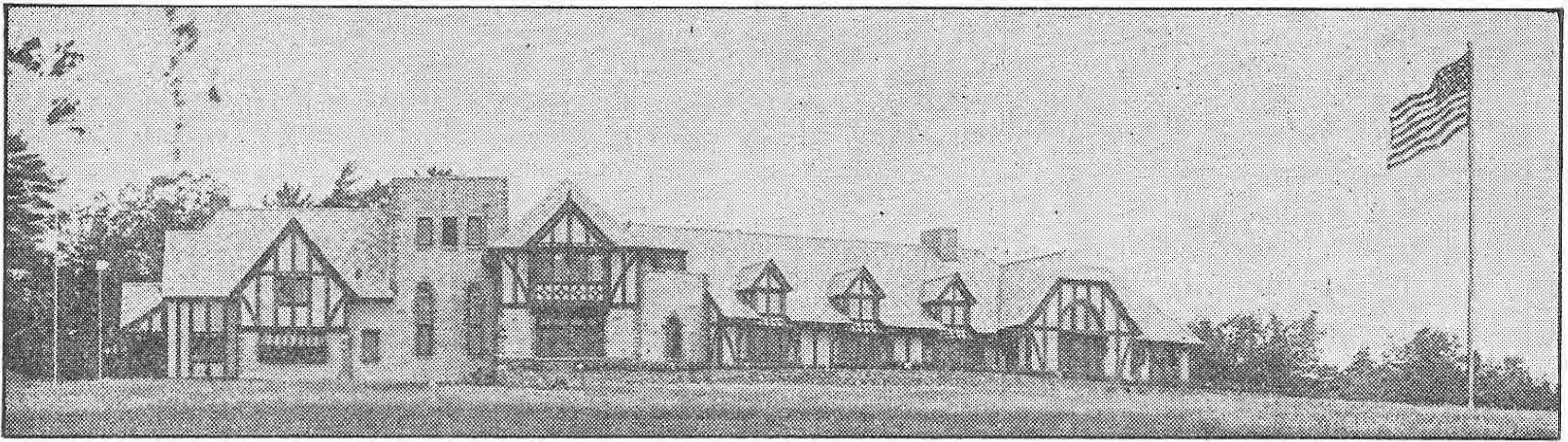
He then took the run which he liked best in all his 52 years with the Delaware and Hudson: the

(Continued on page 76)

First Bridge Over Hudson at Albany



Opened Feb. 22, 1866 over 30 years after the R. & S. bridge at Troy



The Lodge, Howe Caverns

A Contented Cow Discovered

HOWE CAVERNS,

An Outstanding Natural Wonder

FARMER Lester Howe's cow, "Millicent," seeking the most comfortable place to stand and chew her cud on hot summer days, found a crevice in the rocks from which a steady current of cool air issued, thereby becoming the discoverer, as far as modern times are concerned, of what is today proving to be one of the most amazing scientific finds of all times, Howe Caverns. Mr. Howe, who was interested in geology as well as farming, on observing how contentedly "Millicent" stood at this same spot day after day, investigated, and noticing an opening which apparently went back into the hills a short distance from the present site of our Howes Cave station, courageously ventured inside, bearing an oil torch to light the way.

After more exploring, Howe's Cave, as it was then called, was opened to the public. The pitch-dark cavern was only feebly lighted by oil lamps or torches, while visitors, clad in rubber boots and oilskins, waded, climbed, and crawled upstream to the natural dam at the end of the underground lake. Crossing this body of water in a crude boat, parties continued through the winding passageways, catching only fragmentary glimpses of the various chambers and formations because of insufficient illumination.

Because of these conditions the caverns were visited only by the most venturesome prior to 1929. In that year a new entrance was opened a mile and a half from the original crevice.

The caverns are now entered through a lodge, architecturally resembling a country club, which is provided with a lounge, rest rooms and coffee shop. It has a sightly location on a hilltop about midway

between the villages of Howes Cave and Cobleskill, commanding a view of the Susquehanna Valley in both directions. Modern electric elevators lead down into the earth a distance equal to the height of the 13-story tower of the Delaware and Hudson General Office Building at Albany. Power for the elevators and the 1400 bulbs which illuminate the caverns is furnished by a public utility company, although an auxiliary standby unit is available to assume the entire load should the regular system fail.

Underground there are sights to interest everyone, regardless of age or occupation. Drilling the 156-foot elevator and stairway shaft was an engineering feat in that it was sunk through solid rock to the head of the underground stream, at a cost of \$1,000 per foot, and the surveyors scored a "direct hit" on their underground target. Should the two elevators become inoperative for even a short time the shaft also contains a steel and concrete stairway so that anyone in the caverns could walk to the surface. Telephones at convenient intervals make possible communication with the lodge.

The source of the mile-long underground stream, one of the first things a visitor sees after leaving the elevators, has never been exactly determined. Although scientists have attempted to trace its source by coloring and putting sawdust or grain in every known water supply in the vicinity, they have never yet been able to determine where it comes from. Throughout the year, except in flood times on the surface, it remains at a practically constant level, and is pure and clear. A natural dam, three-quarters of a mile from the point where the water first emerges from the rocks, forms an underground

lake, which will be described further on. The stream continues beyond the dam, disappearing through a cleft in the side of the cavern and finally emptying into Schoharie Creek near Howes Cave station.

Strolling down through the caverns, the visitor sees all manner of water-carved and naturally-built formations in passageways and chambers varying in size from a cubic foot to one, called the Temple of Titan, the ceiling of which is 60 feet above the level of the stream. As the water rushed through this underground "pipe" for centuries, the softer rocks were washed away while the harder ones remained, leaving natural bridges, imposing statues, and chambers of varying size and shape.

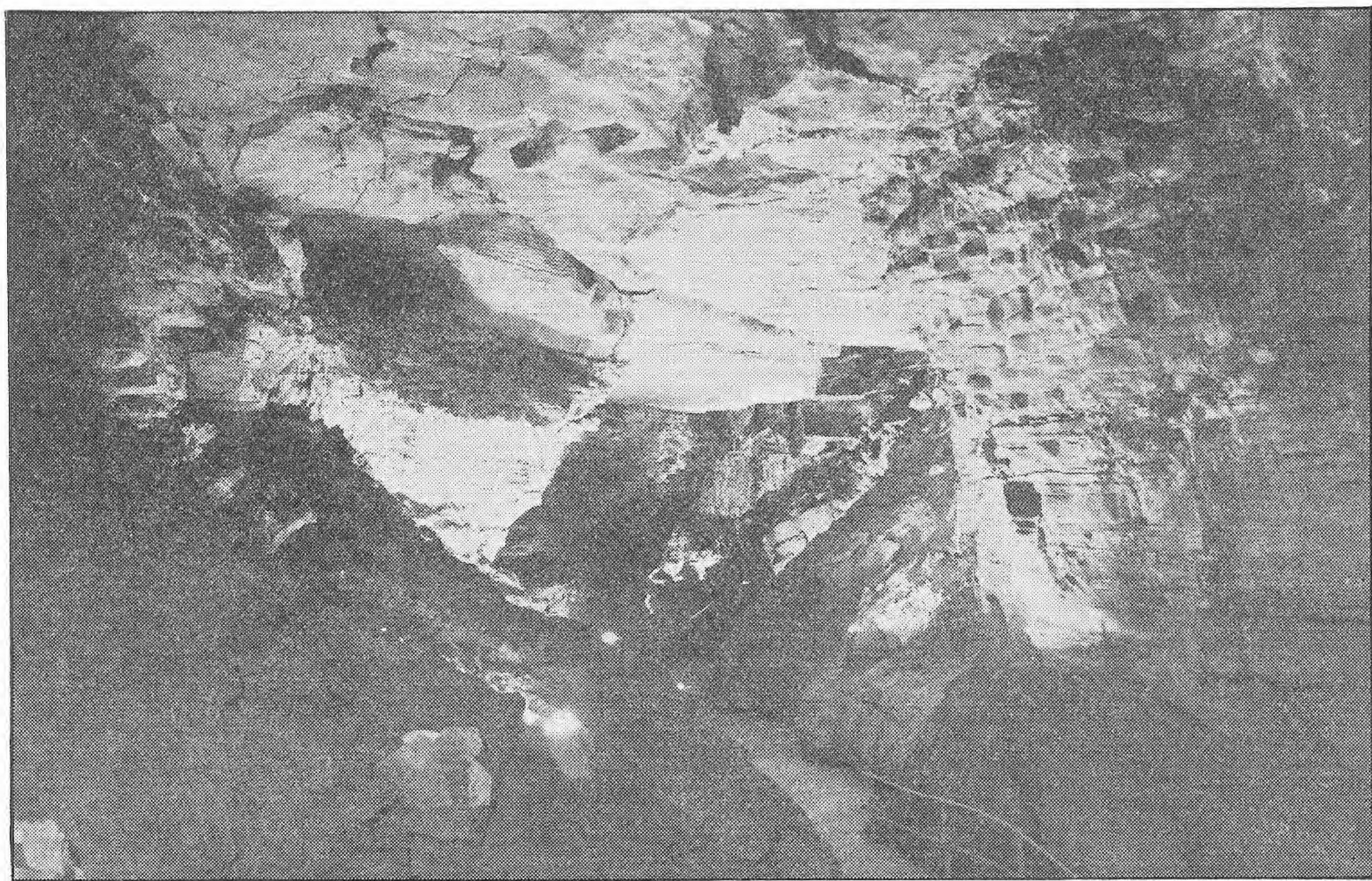
Other formations were made and are being built up by water seeping down from the surface. The water, trickling down through cracks and crevices, is charged with carbonic acid and as it passes through these tiny channels it dissolves the rock and carries the lime with it, finally dropping from the roof of the cavern to the floor or the stream. As each drop falls it leaves behind it a particle of sediment, billions of which eventually build a hollow stone "icicle" called a stalactite. When the water drops freely a stalactite is formed on the ceiling and a stalagmite is built on the floor. Where a steady

stream runs from the wall, cascading down over the rocks, a flowstone is deposited.

Geologists estimate that it takes at least 100 years for a single cubic inch of stalagmite, stalactite, or flowstone to form. There are places in the caverns where a stalagmite and a stalactite have grown to the point where they joined, forming a solid column. There is also a stalagmite 50 feet in diameter; by computing its volume the age of the caverns has been set at at least a million years.

With a little imagination and the aid of clever lighting effects a visitor is able to see in the formations imposing statues of things varying in size from a giant witch's face, a pipe organ, and a "Leaning Tower of Pisa," down to a dainty statuette of a colonial dame, an almost perfect oil can, and an inverted medieval village, complete with walled castle and cross-surmounted church.

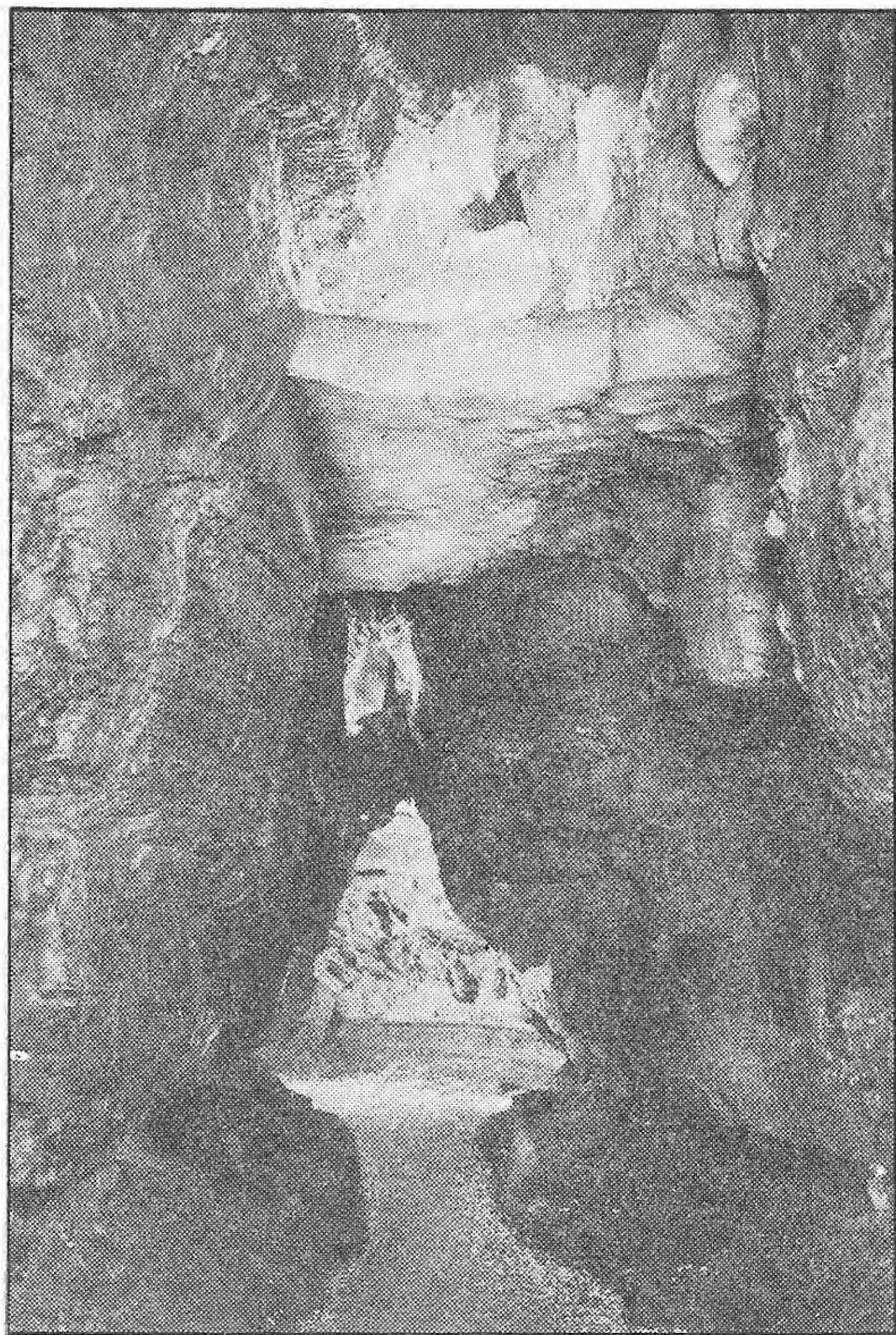
The path ends at the head of the underground lake which lies 200 feet below the surface of the ground. Flat-bottom boats carry passengers a quarter of a mile down to the natural dam and back, propelled and steered with poles gondolier-fashion. The lake, which like the balance of the caverns, is illuminated with many-colored lights, is lined with more carvings and formations. In places it is so narrow that there are only inches of clearance for the boats.



Approaching the Temple of Titan

Whereas formerly visitors had to be specially dressed to explore the caverns, now all that is necessary is that they wear enough to be comfortable at 54° F., the temperature level of the caverns throughout the year, wraps being provided for visitors dressed only for summer temperatures. More than a mile of gravel, brick, and concrete walks, with iron railings and bridges where necessary, have been built, making boots and oilskins unnecessary.

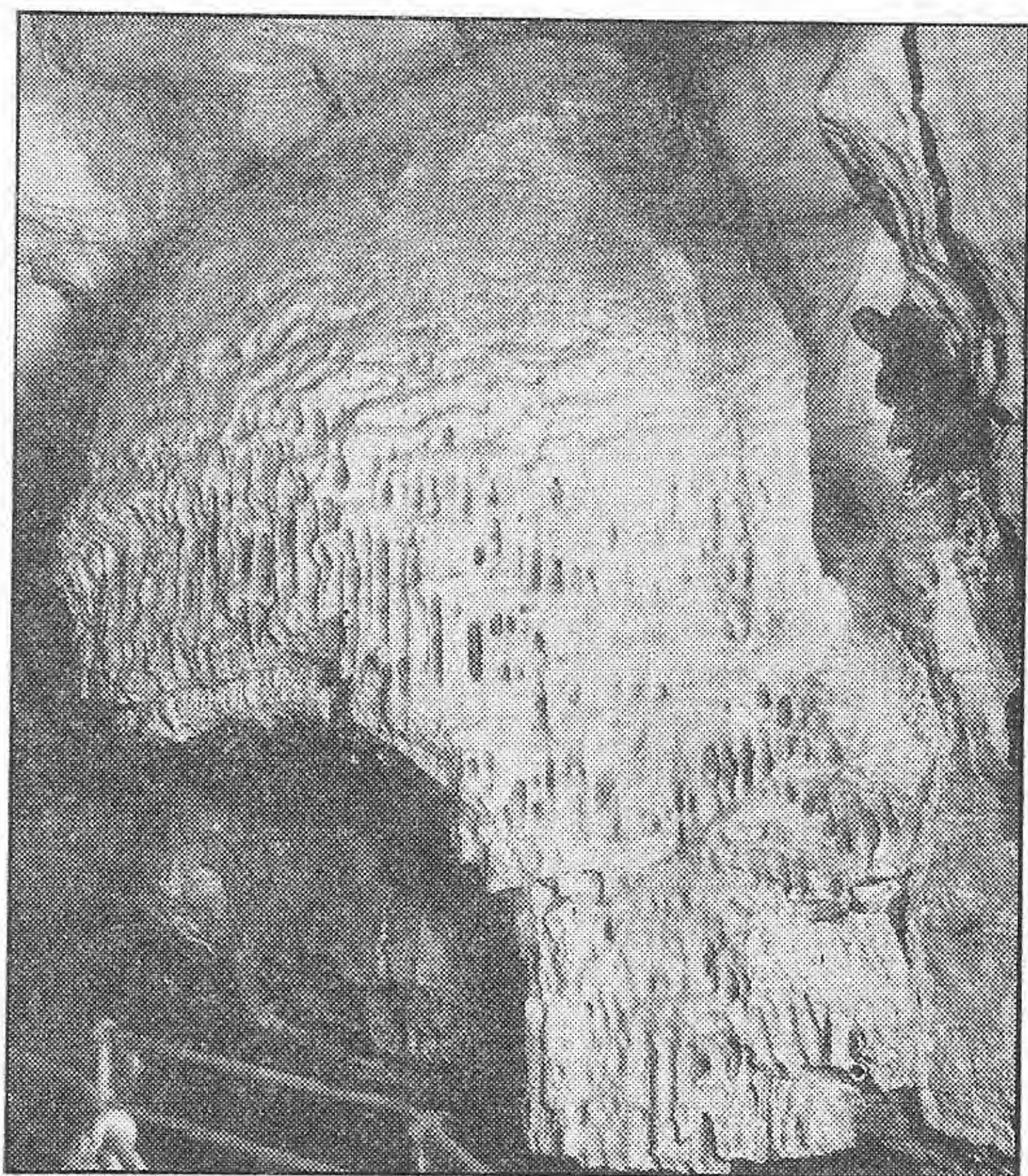
The air in the caverns is kept fresh and pure by a system of natural ventilation. In the winter, when the outside air is colder than that in the



"Stained Glass Window" in roof of "Winding Way." The photograph on the cover shows the end of this passage.

caverns, the warm air escapes through the upper entrance, drawing in cold air at the lower opening. During the summer the order is reversed: warm air drawn in from above is cooled in the caverns and passes out at the lower end.

In a passageway leading off of the main cavern, in what has been named Titan's Temple, is a natural bridal altar before which, in 1854, the daughter of the caverns' discoverer was married.



"The Bishop's Pulpit"

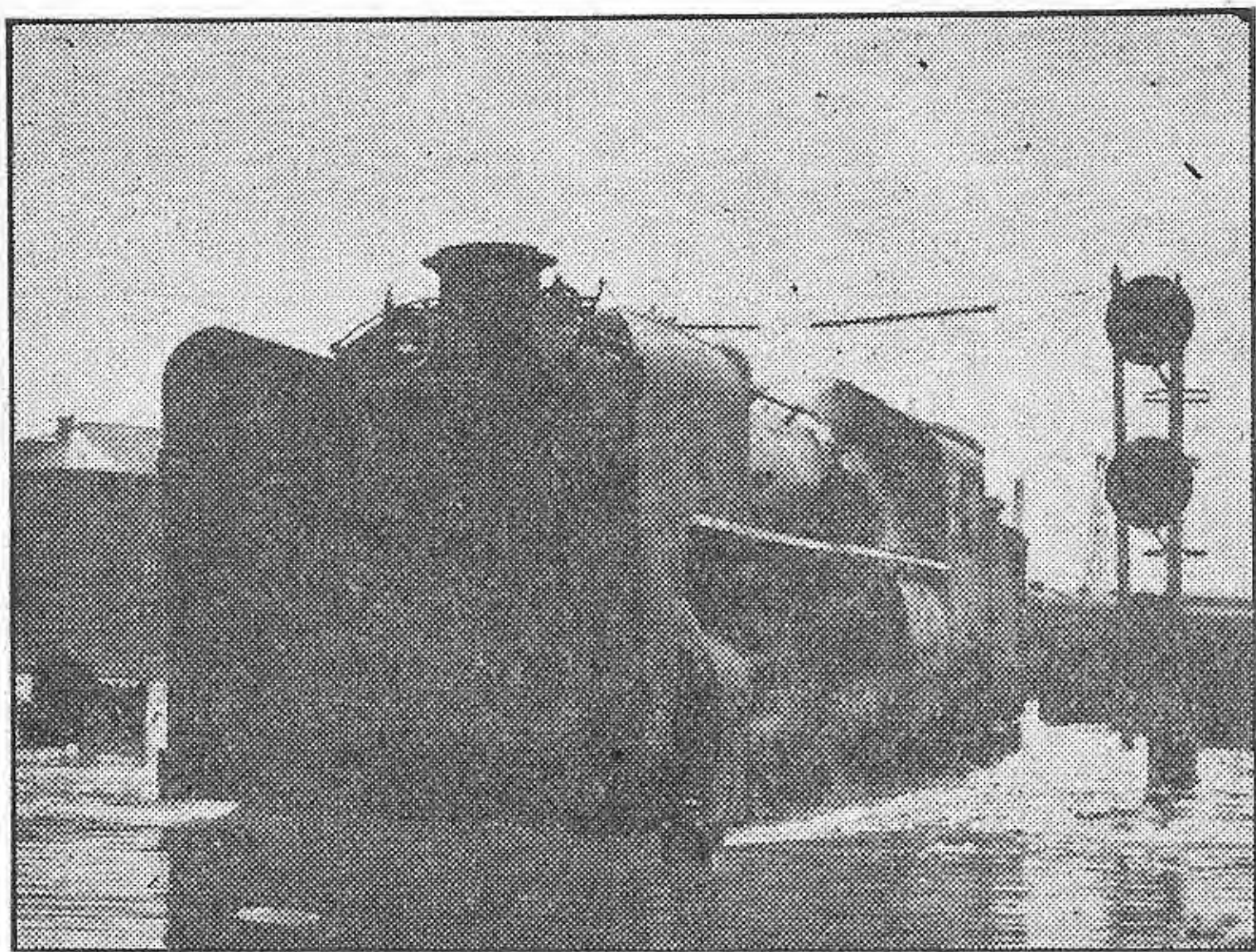
On May 10, 1928, 74 years later, another bride and groom were wedded there. Since that time twelve other marriage ceremonies have taken place in this grotto 170 feet below the surface, the couple standing on a heart-shaped block of calcite rock 8 inches thick, through which shine the rays of a concealed electric light.

Another cavern, called the Winding Way, shows erosion in a striking form. Here the subterranean stream, rushing through the natural, underground aqueduct followed the line of least resistance, boring through the soft rock and avoiding the hard. This passageway, no longer the course of a stream, is from three to six feet wide, from ten to 100 feet high, and about 550 feet long, and rounds curve after curve in bewildering succession. Here is located the famous "Kissing Bridge" where tradition requires couples wedded in the caverns to climb up on opposite sides of the peculiar formation for the edification of the wedding guests.

At one point there is a flowstone so white and cold that early visitors thought it was ice and named it "the Glacier." Later investigation proved that it is actually stone, although the layman might still be deceived by its appearance and temperature.

There are several branches of the caverns which have not been explored. Some day the accumulated clay will be cleared out and possibly new wonders shown to the public. One is being investigated now with the hope that, with the removal of loose deposits made by an ancient underground

(Continued on page 77)



Train 305 Arriving at Albany

RAILROADERS who watched the progress of trains passing through water up to the level of the car floors during the floods this spring predicted dire results in the way of delays caused by anticipated hot-boxes. However, the record which the Delaware and Hudson has been making in this respect was unmarred when the waters subsided and normal operation was resumed. While it is true that, in a few instances, extra precautions were taken to remove excess water from journal boxes that had lain submerged and lost their oil, in most cases it was not possible to give much attention without unduly delaying trains, and they proceeded without experiencing any considerable difficulty, despite unfavorable conditions.

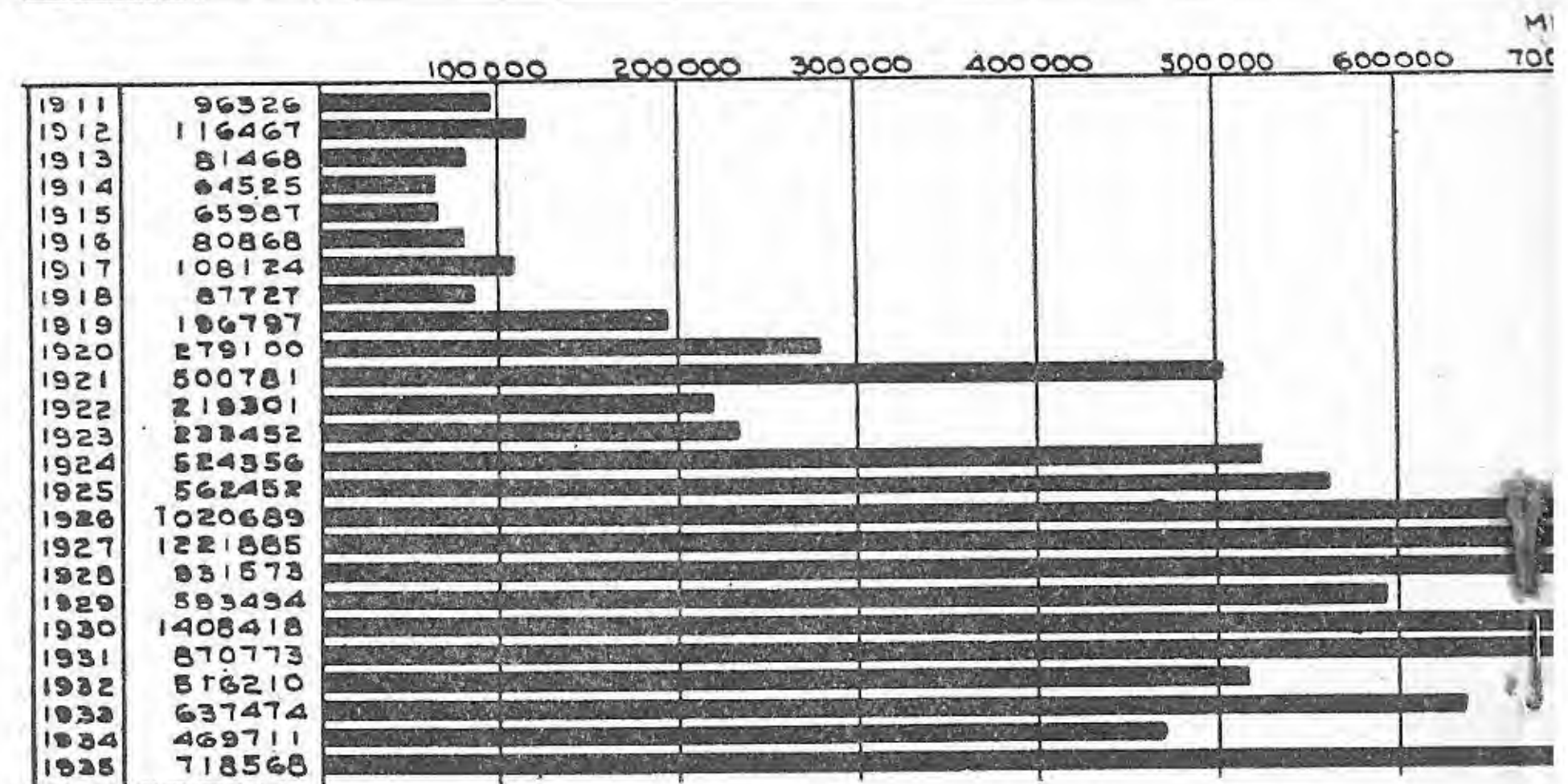
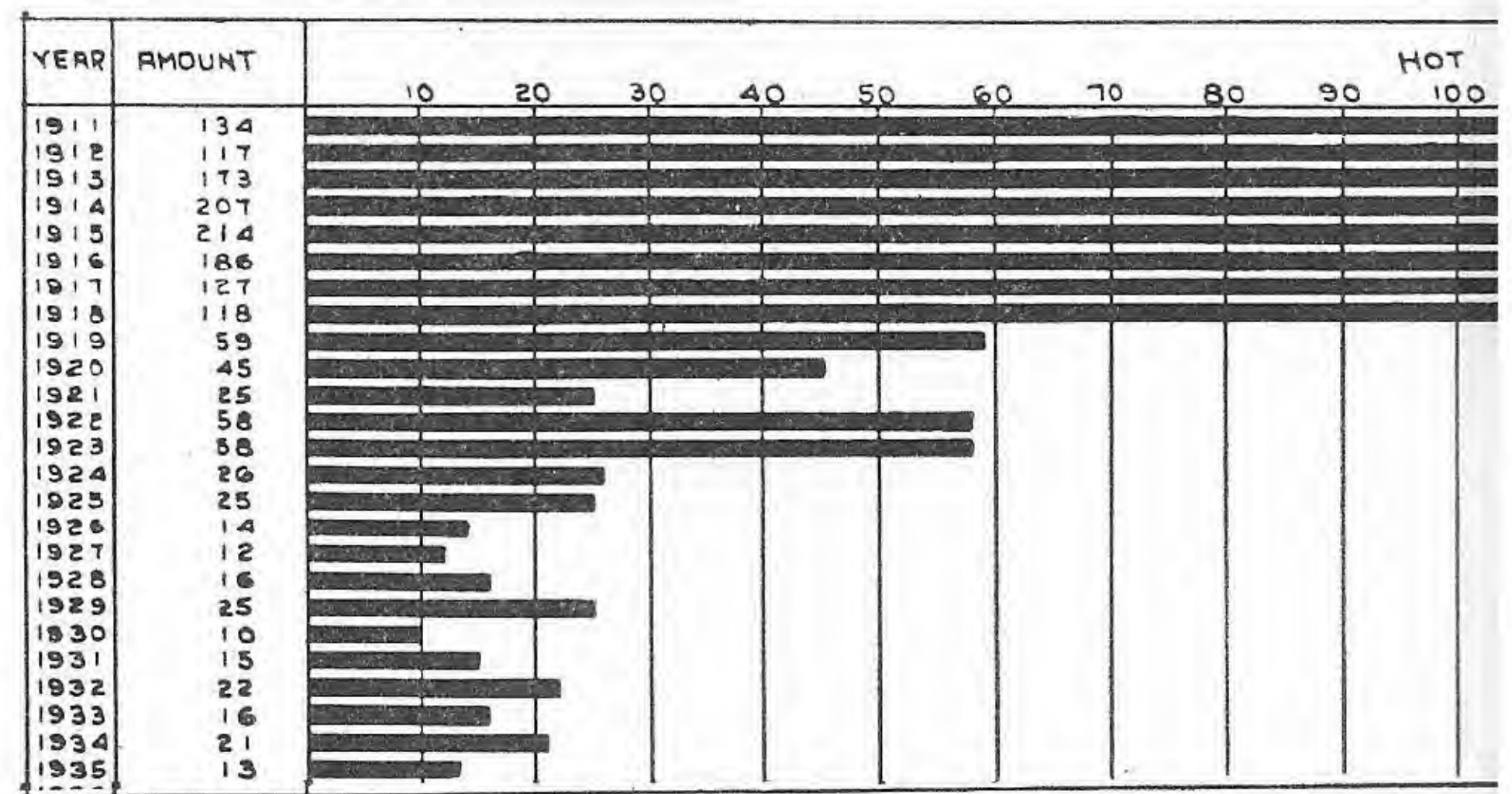
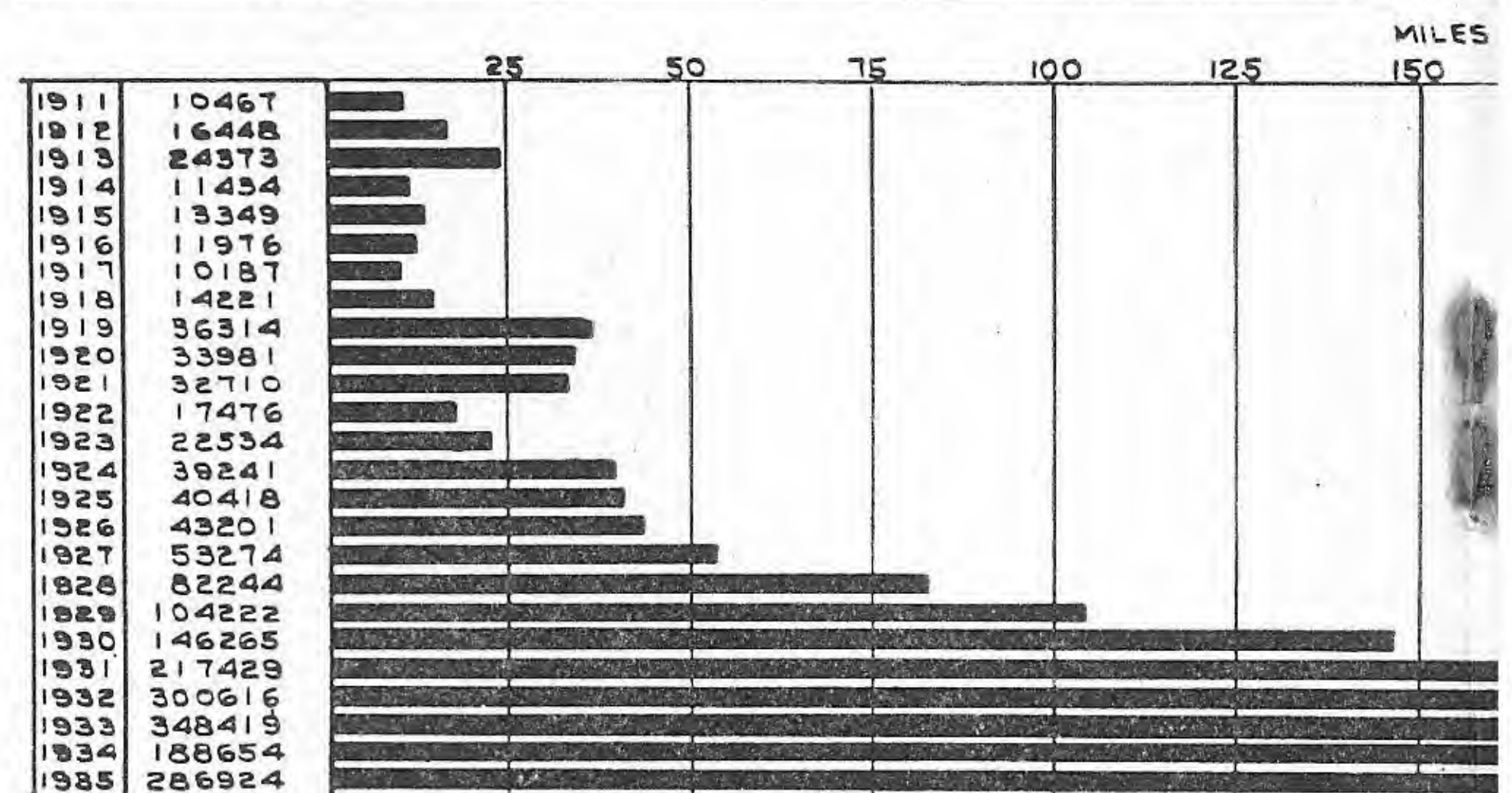
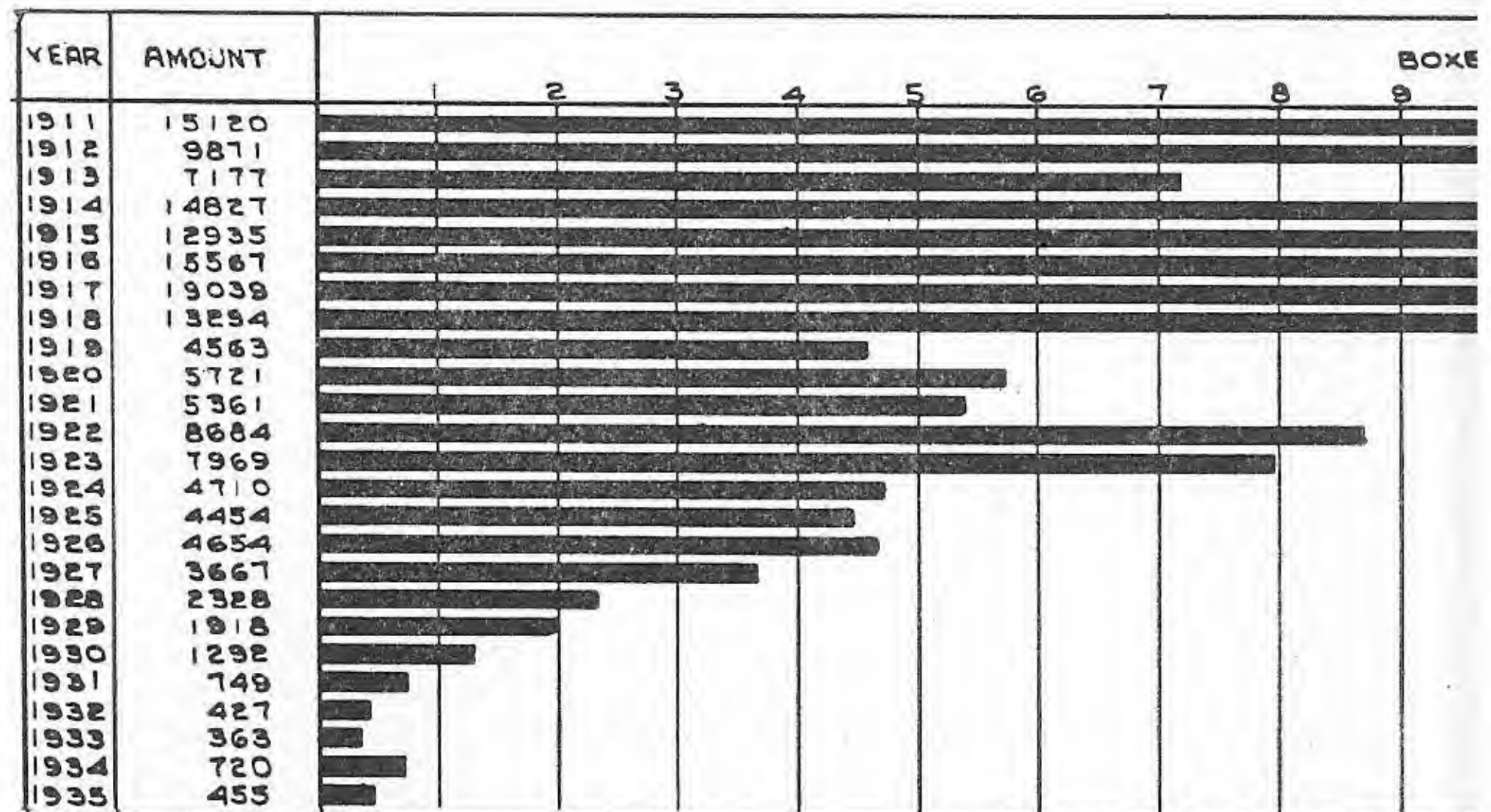
That this resulted from something more than mere good luck is apparent from an inspection of the accompanying charts which show the number of hot boxes in freight and passenger service each year for the past quarter of a century, also the miles run per hot box. Notwithstanding the heavy snows and the severe cold of recent winters, car inspection forces were able to continue their usual close examination of car details to prevent road failures and consequent delays to shipments in transit, to the disappointment of patrons.

Prior to 1927 the hot box problem was one of the most vexing that faced the managements of American railroads. The matter was made the subject of an intensive study by the Delaware and Hudson and, in 1928, a vigorous campaign was undertaken to get to the root of the trouble. Three remedial measures were taken: the use of materials—oil and waste—of proper quality; the adoption of a satisfactory system of caring for journal boxes and contained parts; and the correction of improper truck details such as springs.

Since the cost of repacking all truck boxes with new material would have been prohibitive, consideration was given to the possible economies offer-

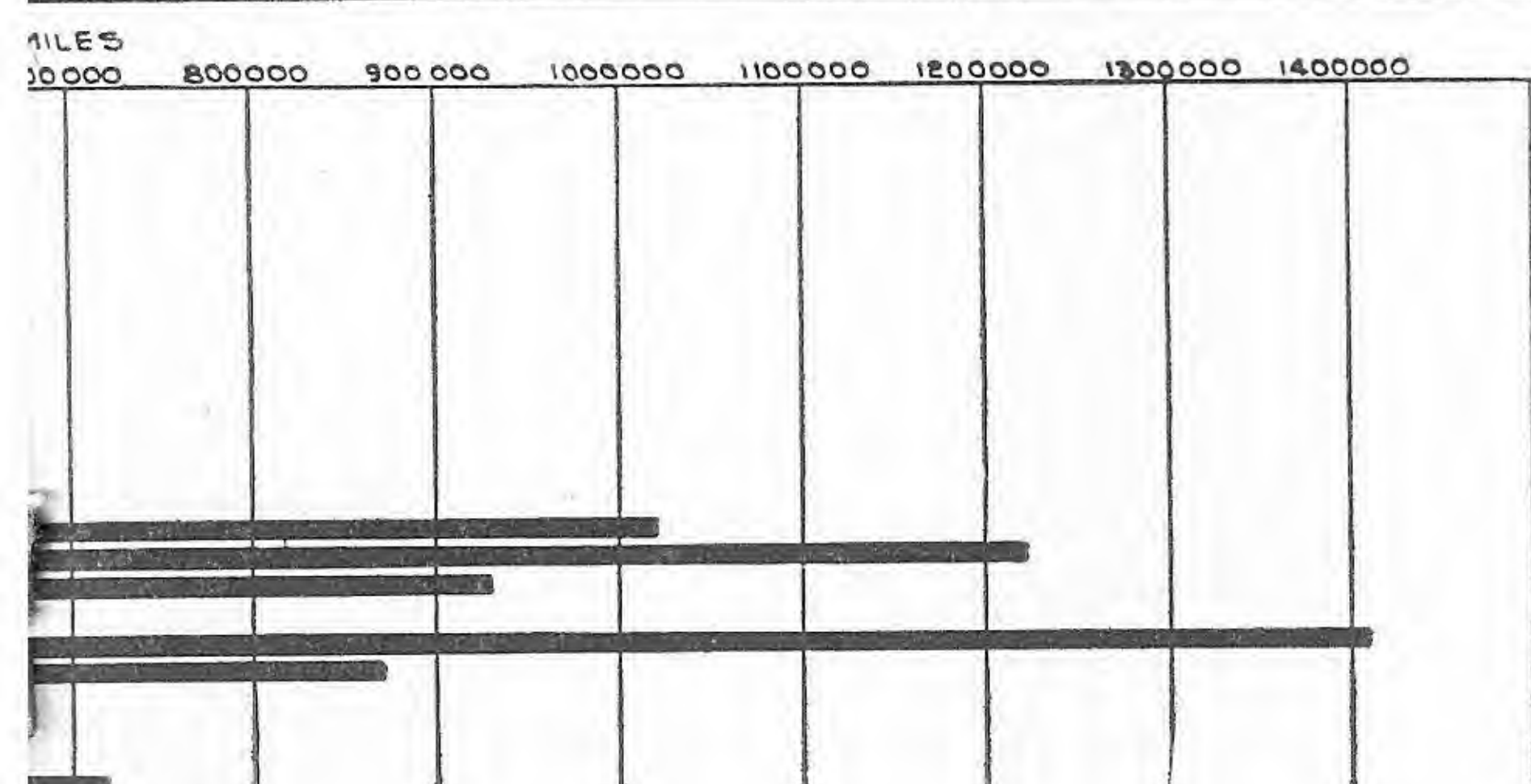
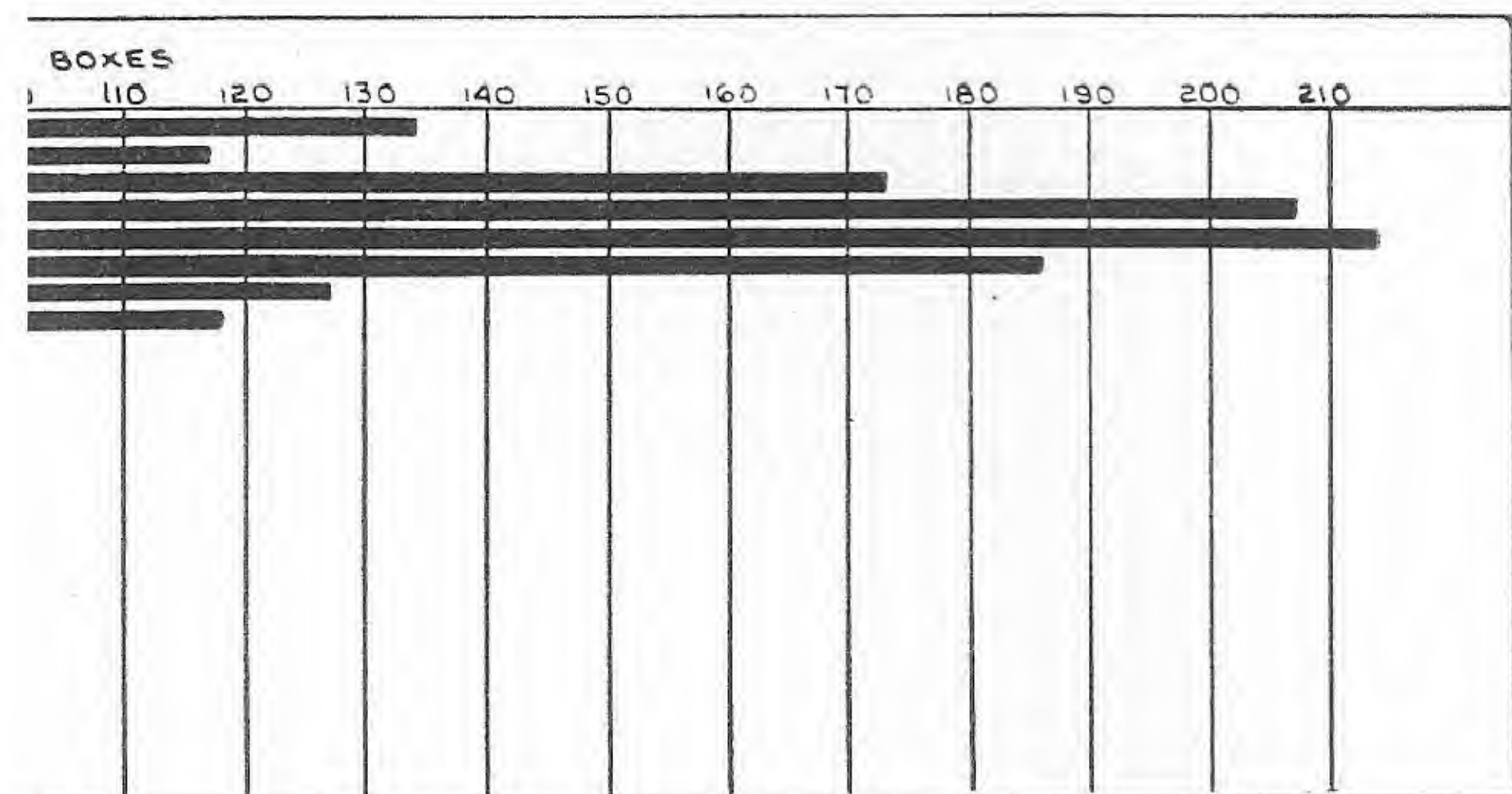
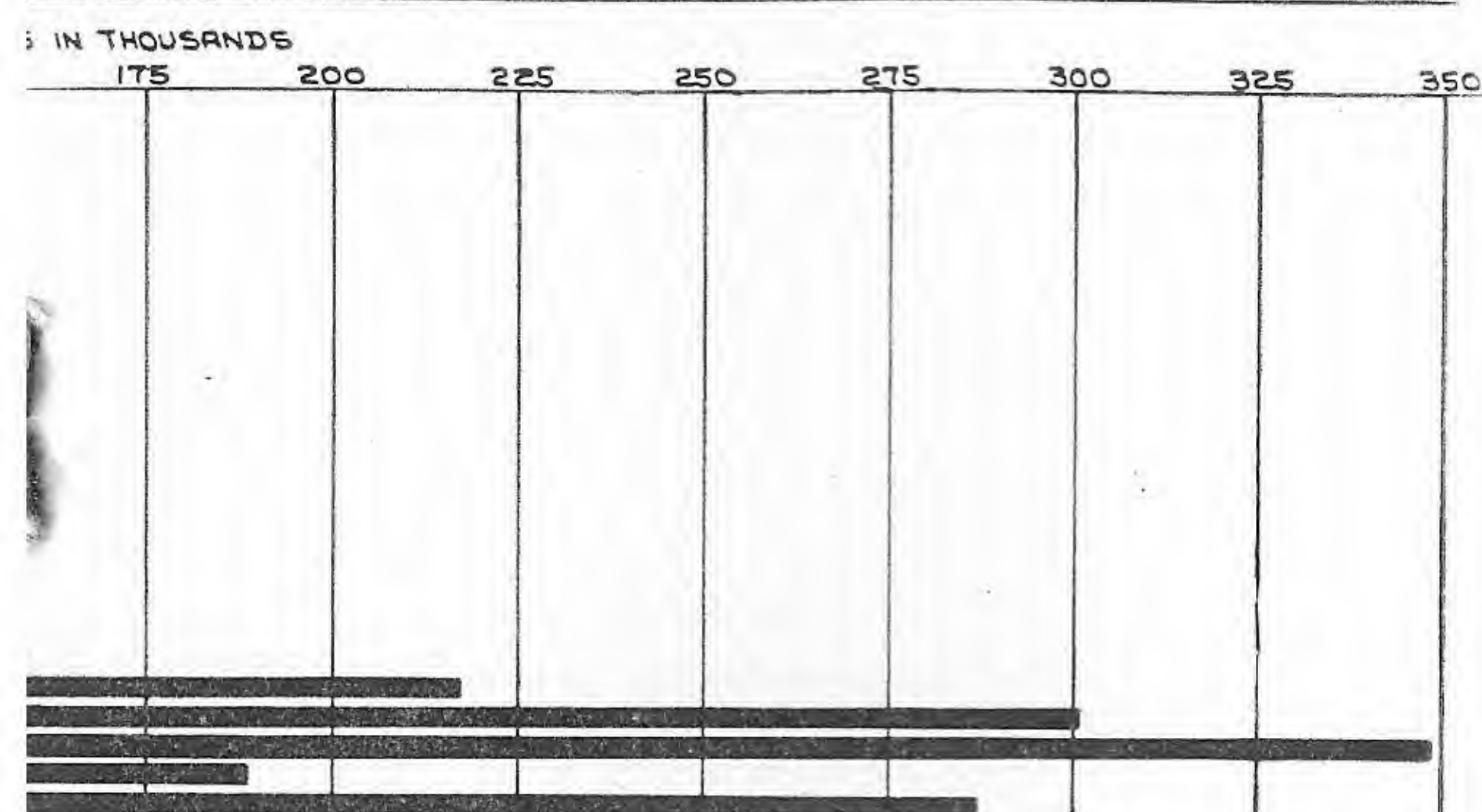
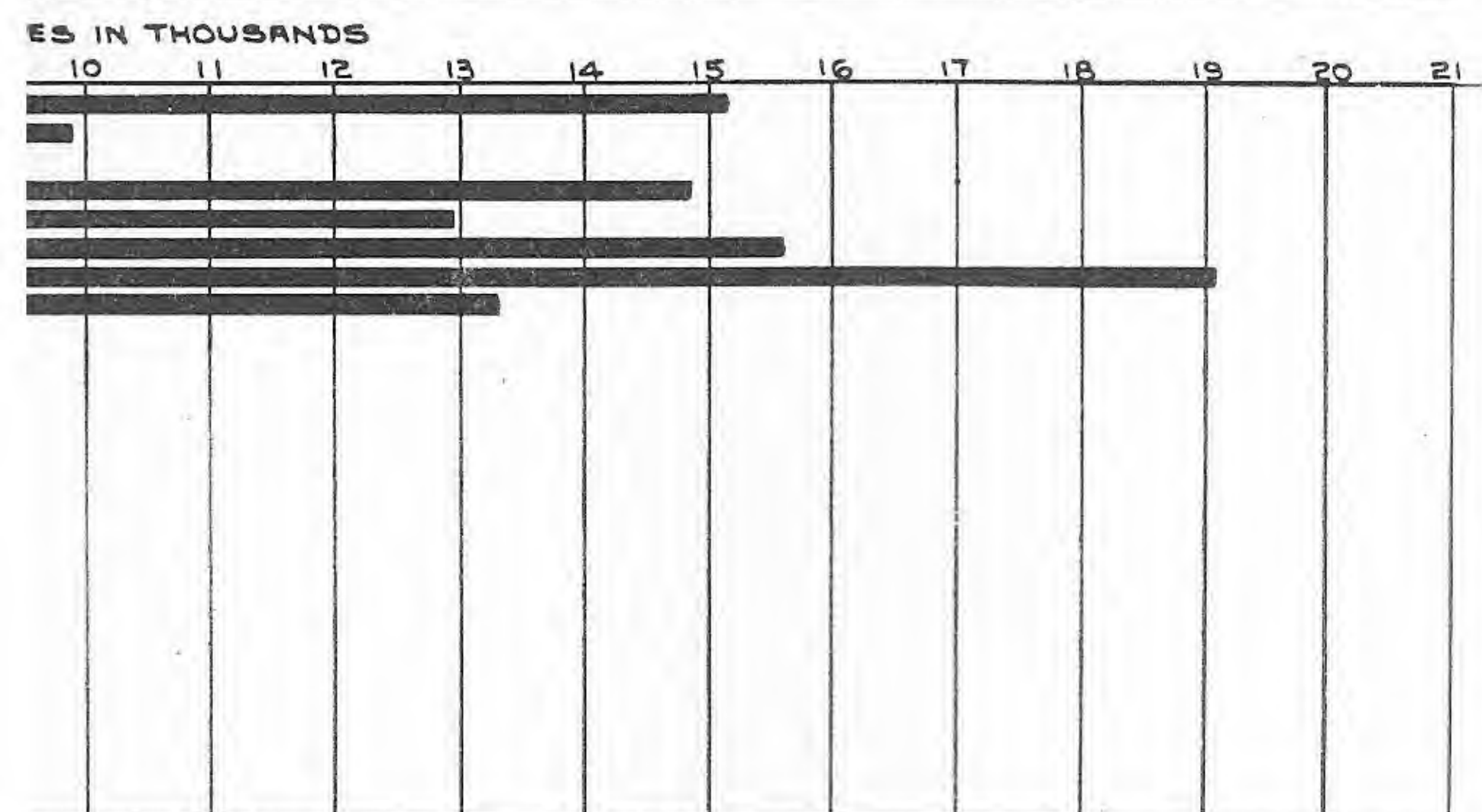
Hot Boxes—Their

(Delaware and Hudson's Record in



Cause and Cure

(in Freight and Passenger Service)

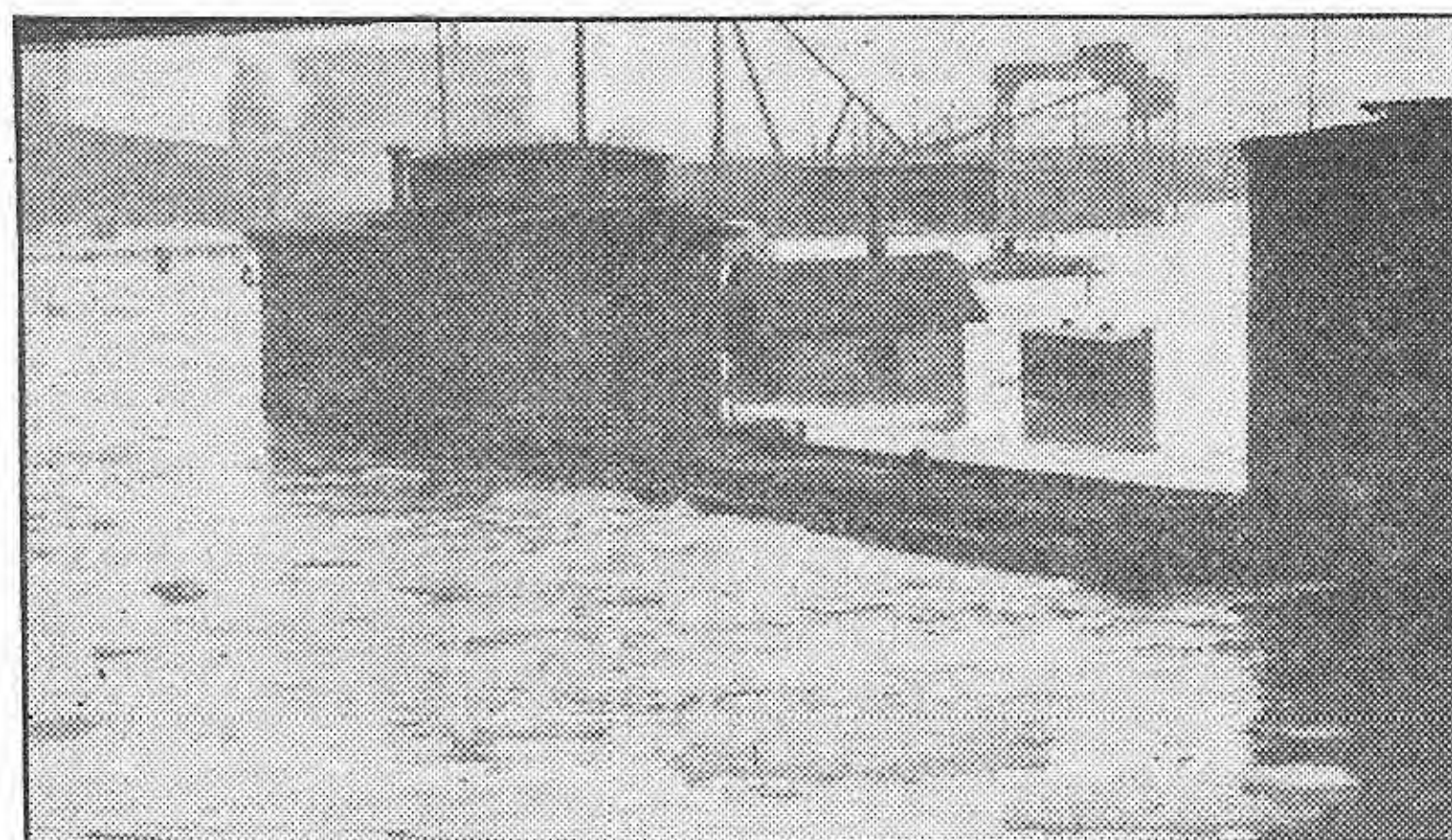


ed by renovation and re-use of dirty box packing. Experiments in 1927 and 1928 led to the erection, in 1930, of a modern oil and waste reclamation plant which has been described in previous issues of *The Bulletin*. This plant turns out about a million pounds of packing each year, of which only approximately 10 per cent represents new materials. The economies realized from such an operation are obvious.

Adoption, March 1, 1929, of Rule 66 of the American Association of Railroads, then the A. R. A., which provides for periodic repacking of journal boxes with oil and waste of proper quality, has done much to help eliminate hot box trouble. Due to the wide distribution of freight cars, particularly, the cooperative effort of all roads is needed to minimize the number of delays arising from this cause, with proportionate benefits accruing to all concerned. A system of education now in effect in the Delaware and Hudson Car Department insures that all supervisors and their subordinates who have any connection with journal box or wheel maintenance are properly instructed by members of the staff of the Master Car Builder. Periodic checks are made to ascertain that such matters are given uniformly correct handling at all points.

This educational campaign has succeeded in making all concerned "hot box conscious." Each failure that occurs is carefully investigated at the point of last previous inspection and called to the attention of the individual inspector who examined the car, much to his chagrin as all points are anxious to have clear records each month.

The charts in the center columns show, in order from top to bottom, the number of train delays caused by hot boxes and the number of car miles operated per hot box during the 25 year period, 1911 through 1935, the upper pair of graphs representing freight and the lower pair passenger equipment. From these it will be seen that the chance of a hot box is one in about 287,000 miles, while hot boxes cause a passenger delay only once in 719,000 miles.



The End—Of Course!

The

Delaware and Hudson Railroad
CORPORATION
BULLETIN

Office of Publication:
DELAWARE AND HUDSON BUILDING,
ALBANY, N. Y.

PUBLISHED MONTHLY by The Delaware and Hudson Railroad Corporation, for the information of the men who operate the railroad, in the belief that mutual understanding of the problems we all have to meet will help us to solve them for our mutual welfare.

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Vol. 16	May 1, 1936	No. 5
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Cooperation is not a sentiment—it is an economic necessity.

—CHARLES STEINMETZ.

It Doesn't Work!

IF anyone doubts the impossibility and folly of attempting to assure the prosperity or security of any particular class or group of citizens in the United States by legislation, he is respectfully referred to a report of the Bureau of Agricultural Economics of the Department of Agriculture issued in February, covering an exhaustive investigation of cotton production in this country during 1933 and 1934. It shows how various classes of cotton growers fared under the A. A. A. as compared to their position had it not been in effect.

This government document shows that in a number of cases the increase in income after the farmer had received a bonus from the government for "not raising" cotton was less than the amount of the bonus, showing that the farmer would have been better off to have raised his usual crop, even though it brought less per pound than the price set by the government. (The report estimates the probable price would have been $7\frac{1}{4}$ cents in 1933 and $8\frac{3}{4}$ cents in 1934.)

In some cases, the net income including the Government payment to the farmer was less than he would have received by marketing a normal crop at lower prices. The following paragraphs are quoted direct from the report:

"A study of share-cropper incomes on a few plantations in Mississippi in 1934 showed that the cash income per family including benefit payments

was \$2.87 less than it would have been without the A. A. A. program.

"In the high plains area in Texas in 1933, the income of operators using share-croppers was increased \$2.30 per acre by the plow-up campaign. This income included Government payments of \$3.30 per acre; thus the net income, exclusive of Government payments, was \$1 less than it would have been without the crop reduction. In 1934 in the same area, the Government payments were \$2.97 per acre and the income increase resulting from the program was only \$2.48 per acre, a reduction in income excluding the Government payments of 49 cents.

"In the Upper Piedmont area of South Carolina in 1933 the income of operators using share-croppers was increased \$3.03 per acre, which again was less than the Government payment of \$5.10. In the same area in 1934 the income increase was only \$3.81, although the Government payment was \$4.50. Share-cropper incomes in the same area in 1934 were increased only 10 cents per acre by the A. A. A. program, although this income included 50 cents per acre of Government payments."

Not only were the incomes of the cotton farmers affected by the crop curtailment, world consumption of American cotton was seriously reduced, our competitors applying themselves joyously to the business of supplying our former customers since the price of our cotton was kept high enough to allow them to undersell us very profitably. Not only were the incomes of cotton-growers reduced, or altogether destroyed, as in the case of the "share-croppers" who were thus forced onto the relief rolls, but so were those of all those who handle, process or transport cotton, fertilizer, farm machinery, food, clothing and all the necessities and luxuries normally purchased by the growers of cotton.

Our modern social order is so delicately arranged that even the slightest adjustment has far-reaching effects, while meddling with fundamental economic principles is even more dangerous than fingering a "buzz" saw.

Correction

ON page 50 of the April issue of *The Bulletin* it was incorrectly stated that the Gregorian Calendar was put in effect in 1852. Our Librarian, MRS. SMITH, has suggested that those who are in the habit of saving the magazine for reference purposes should correct their copies to read "Prior to 1752—" at the beginning of the second paragraph.

Steam Still Supreme

TO those moderns in the field of transportation who question the supremacy of the steam locomotive we submit its performance in the flooded areas where it kept trains moving through water which had reached a depth of over four feet above the rails. Danger of water flowing into the coaches or wetting the lading of freight cars, or unsafe track conditions, rather than inability of the locomotives to continue, prompted the decision to abandon operations as the water continued to rise. No electric or Diesel-electric unit with traction motors mounted on the trucks could duplicate this performance.

We cannot but admire the sturdiness and dependability displayed, not only by Delaware and Hudson Locomotive 772 which with two coaches moved back and forth over the Susquehanna River bridges of the Wilkes-Barre Connecting Railroad for 24 hours during which it removed some 1500 people who had been marooned in their homes south of Wilkes-Barre, but also of "The 609" which took a consolidated train of 16 cars north to accommodate travelers otherwise unable to proceed because of washouts on the Rutland Railroad.

The Railway Gazette calls attention to another point which we are likely to overlook, perhaps due to the innate modesty of the "iron horse," or his master. Recent speed records are connected in the minds of most people with the highly-publicized "streamliners." Yet for real high-speed performance, having due regard for the accomplishments of the various Diesel units, the Pennsylvania's new electrification and the 75 miles-per-hour schedule

of the Chicago, North Shore and Milwaukee electric line, steam still tops the list of runs made at 60 m. p. h. or better. The mileages covered by such runs total: Steam 9,469, Electricity 7,471, Diesel 2,339. Of the 18 runs scheduled at start-to-stop speeds exceeding 70 m. p. h., totalling 935 miles, 12 are steam-hauled, 2 electric, and 4 Diesel.

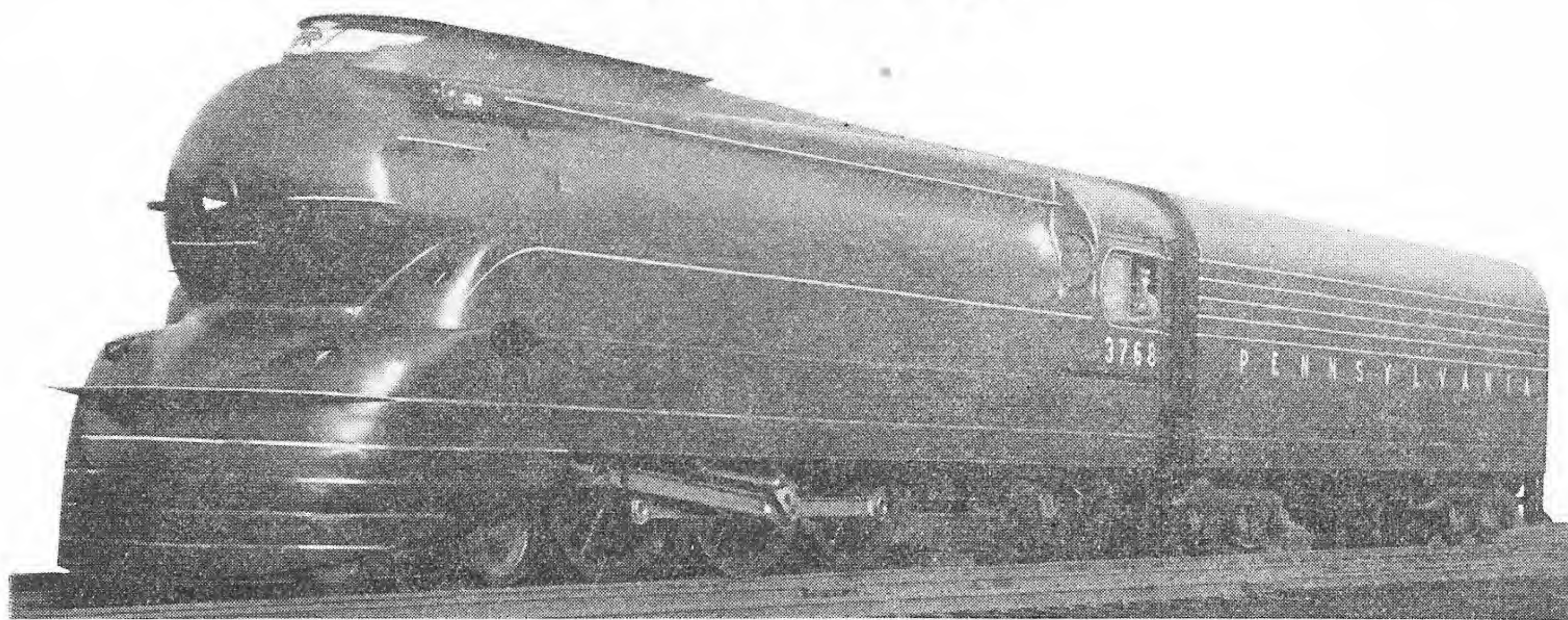
Most remarkable of all is the realization that the eight fastest start-to-stop runs in the world are made by steam locomotives of the conventional type, not streamlined, running on the main line of the Pennsylvania between Englewood and Crestline, better than 75 m. p. h. being demanded by the schedule.

How It "Happens"

WHEN we think of the greatly admired traits of character of Colonel Charles A. Lindbergh, we should also remember that they did not "just happen." Some who have marveled at his self-control and humility in days of distracting publicity have not known that for many years he had learned to discipline himself by a daily check-up of qualities which he wished to possess.

Behind the strong characters of the men who lead the world are stories of years of self-discipline. Each day lived truly is more than a day well spent. It is another stone placed in the cathedral of character that we erect with the years. Ours is not the question whether we shall form habits. We are forming them all the time and cannot help it. Ours is to determine which habits we shall form by careful attention to the matter.—*Rays of Sunshine.*

"Black Beauty"



Courtesy Mutual Magazine

What more appropriate name for this new Iron Horse?

"Grown Down-Cellar"

No Longer Implies a White-livered, Inferior Product

THE possibility that the family of the future may grow its own vegetables in a corner of the basement, where plants will thrive luxuriantly without the aid of soil or the light and heat of the sun, is suggested by revolutionary horticultural research which has been going on quietly for several years. At the recent horticultural exhibition in New York, Dr. John M. Arthur of the Boyce Thompson Institute showed a new type of greenhouse in which plants several times their normal size were growing in glass pots containing only a solution of certain minerals, salts, and other plant foods. Carefully controlled artificial light and heat completed their requirements, and the plants developed two or three times faster than under natural conditions. A gardenia plant growing in a dark basement under the light of a sodium-vapor lamp for two weeks produced dozens of sweetly scented flowers of unusual beauty. Dr. P. W. Zimmerman, who with Dr. A. E. Hitchcock this year won the \$1,000 prize of the American Association for the Advancement of Science for their study of plant growth at the Boyce Thompson Institute, suggested that in the future explorers will be able to grow their own tomatoes and peas in the polar regions.

This remarkable achievement kindles the imagination. It clearly suggests astonishing changes in the economic status of agriculture as it is measured today, and the significance of what this change may mean is best indicated by two striking examples cited by Dr. L. V. Burton, editor of *Food Industries*, in a recent address. He described a horticultural method in which plants rest on sawdust or some similar material with their roots extending downward through a wire screen into a solution containing the necessary plant foods. In one box about the size of an ordinary desk was a potato plant which had grown to a height of five feet. The crop of potatoes it produced filled the sawdust on which the giant plant rested and it was estimated that this plant alone would yield between five and eight bushels. Considered in terms of nutriment, boiled, mashed, or fried, the possibilities of one or two potato plants in the basement are reassuring.

Still more astonishing was Dr. Burton's account of a tomato plant with a stalk three inches in diameter. From its bed of sawdust it had climbed a frame 10 feet high and then hung down to the floor, laden with hundreds of tomatoes of excellent quality and flavor. This colossal climber was esti-

mated to be producing at the rate of 700 tons an acre per year. In view of the fact that tomato growers consider five tons to the acre a fair average yield, the potentialities of the new artificial method stagger the imagination.

Whether this amazing advance in horticulture can be justified economically is a question that only further investigation can answer. Aside from the cost of the chemicals necessary for plant growth, an abundant supply of cheap electricity would appear to be of fundamental importance. What then would become of the farmer who now supplies our needs? There is no answer for the moment, but Dr. Burton suggests that the truck gardens of the future may be greenhouses or stores, conveniently located in the cities where consumers will buy their vegetables, and possibly fruits, fresh from the growing plants or trees. This alone would eliminate the tremendous annual loss from the spoilage of produce in the stores of today. Large families, he thinks, may have compact, highly productive gardens in their basements. All this presages the day when mothers will say: "Quick, Tommy, run to the basement and pick the tomatoes; our guests are about to arrive!"—*Technology Review*.

Forsook Farm For Railroad

(Continued from page 68)

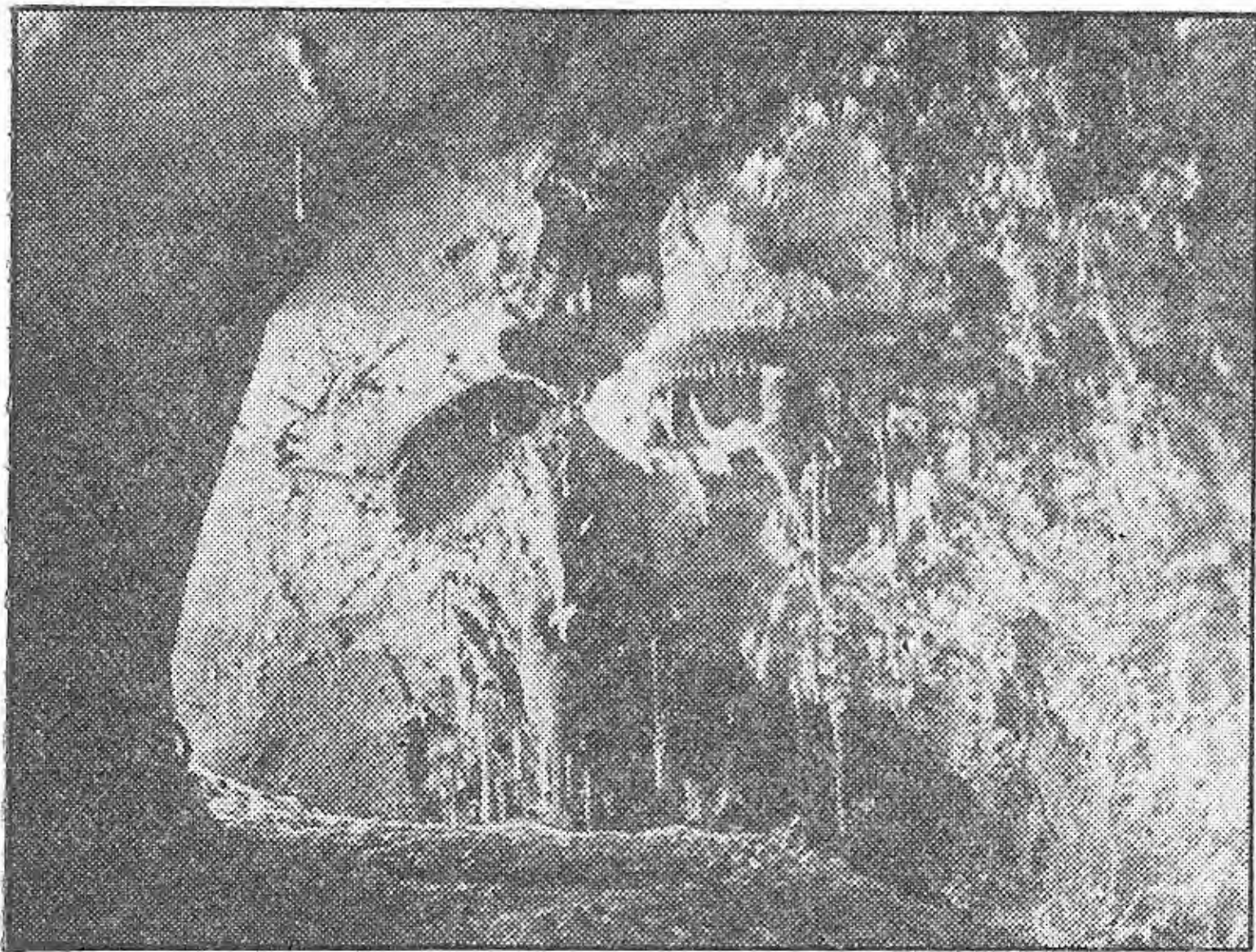
Troy-Mechanicville local passenger job, then operated in competition with the Hudson Valley trolley line, which was later purchased by our company and eventually abandoned. Each week day a crew left Troy for Mechanicville at 5 A. M., shuttling back and forth until 2 P. M.; a second crew relieved them, made two round trips, then ran north ahead of No. 7, the northbound sleeper, and returning ahead of No. 8, the other sleeper. The two crews changed runs each week, the one which held the morning run also operating a few trains on Sunday.

In 1908 MR. BUBB bid in one of the eleven jobs in the Troy and Albany to Montreal passenger train pool, and he continued in the main line passenger service between those cities until his retirement, February 1, 1934. The last three years of his active service were spent on *The Laurentian*, Nos. 34 and 35.

MR. BUBB is a member of the New England Association of Railroad Veterans and the Order of Railway Conductors.

Howe Caverns

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By turning this upside down the inverted "Fairy Village" with its woods, walled castle, and cross-topped church steeple may be seen.

stream, the passageway thus cleared may lead to other great and wonderful caverns; or possibly connect with the "Winding Way."

Scientists have been discovering astounding things there in the depths of the earth, some of which may prove or disprove theories which have been given credence for many years, since the new entrance was opened. One of the most amazing is the growth of plant life near electric light bulbs, in soil which had been untouched for thousands of years prior to 1929. Of this phenomenon, Elsie G. Whitney, Assistant New York State Botanist, writes:

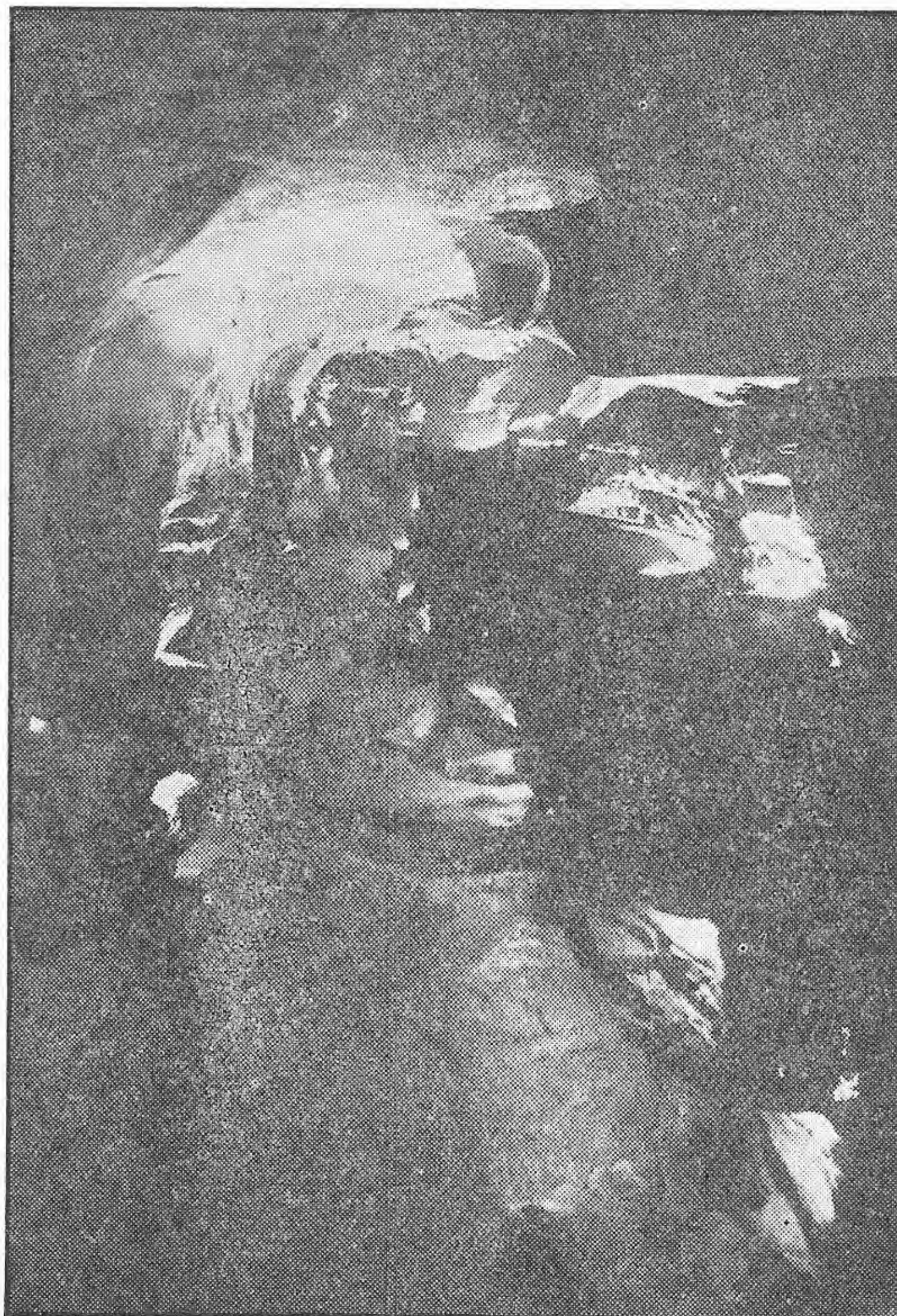
"These spots of plant life represent but the last split second of time. The bright green mosses and liverwort which make up these plant communities are, to be sure, representatives of some of the oldest forms of plant life that appeared on the land, and marked steps in the development toward the plants now covering the earth. The conditions for growth are also, we may suspect, somewhat similar to those encountered by the first plant adventurers when dry land began to appear in ancient seas. But the occupation of a 'raw' and virgin soil by plant life is here as much pioneering as was Columbus' voyage westward or the first ship to sail around the Cape of Good Hope.

"These little islands of plant life are limited to areas a few square feet in extent within the influence of heat and light close under the electric light bulbs. Furthermore, though the caves had openings to the outside air, and had been visited by human beings, at intervals, for years, it was not until the installa-

tion of the electric lights, as a part of the development of the Caverns for tourists' enjoyment, that these lowly plants established themselves. No carefully prepared laboratory experiment could show more convincingly the necessary role played by heat and light in the growth of plants on the earth.

"How the diminutive plants got a start at all, so far underground and away from all others of their kind, is an interesting speculation. The sticky clay soil and constantly available moisture have been ready for centuries to do their part. The tiny spores by which these plants reproduce themselves may have been borne on currents of air circulating from the outside; or workmen may unknowingly have brought them on hands or clothing. Some spores, even, may have been lying dormant on the soil for a long time. But the right combination of heat and light were wanting until the electric lights were installed. And it is apparent that only about those which have been burning longest are these influences sufficient to insure continued growth."

The caverns' age is likewise of great interest, although only a geologist's estimate can be given.



Lighting Effects on the Lake

Dr. D. H. Newland, New York State Geologist, has deduced: that the caverns are about 1,000,000 years old; that before the glacial period this portion of the ocean floor was lifted to its present foothill position; that shells in the limestone indicate that the Atlantic Ocean once reached into this area; that stone age men, if there were any in this region, *did not* inhabit the cave. While the Indians knew of its existence—they called it *Otsgaragee*, meaning “the cave of great galleries” and referred to the entrance favored by Mr. Howe’s cow as “the blowing rock”—there is no evidence that they ever lived in it.

Since the new entrance was opened an average of about 100,000 persons have visited the caverns annually. An interesting observation is that the biggest day of the year from the volume of visitors standpoint, is the Sunday before Labor Day, on which, in 1935, over 3,000 were escorted through the caverns. The next busiest day of the year has been Labor Day.

Neither words nor photography can paint an adequate picture of this natural underground museum; it must be seen to be fully appreciated. Dr. Clara Barrus, biographer of John Burroughs, wrote, “I was wholly unprepared for the unique experience that awaited me in the tour through Howe Caverns. To the thoughtful person the caverns preach their silent ‘sermons in stone’; to the student of geology that buried rocky volume is read with profound interest; to the tourist, seeking thrills and marvels, expectation is abundantly fulfilled. In fact, as Emerson said of Yosemite, one may also say of Howe Caverns, ‘It is one thing in America that comes up to the brag.’”

Cycles

THE rise and fall of debts is probably the most conspicuous feature of the business cycle.

Debts are created in prosperity and are reduced or retired in depression.

At the peak of the 1929 boom, brokers’ loans reached the almost incredible total of eight billion dollars. Now these loans have shrunk to approximately 5 per cent of that figure.

Bank loans on all kinds of securities now aggregate less than one-half of their total at the maximum.

By default and amortization, real estate loans have been reduced in comparable proportion. Loans against goods purchased on the partial payment plan have been paid down until they are now but a fraction of their peak.

Those who wonder why people have not been buying more goods during the last two years can

get the answers from the study of these figures. Consumers have been paying debts. When the cycle is completed, and debts are down to the point where creditors no longer press debtors, or where debtors feel secure in creating new obligations, demand will rise and production will go forward.

Prosperity of the kind we enjoyed in the late twenties springs from the expenditure of future income. A man with an income of \$5000 a year buys a \$10,000 house on which he makes a down payment of \$2,500. He also buys a \$1500 automobile for which he turns in his old car as down payment and contracts to pay \$100 a month for a year.

Millions of others make similar commitments. Cities, states, and the nation engage in magnificent projects which include the building of roads, bridges, and offices.

Suddenly all realize that they have overspent. To meet interest and principal payments, the owner of the house and automobile must go without new clothes and carpets.

As millions of people curtail their purchases in order to discharge their debts, creditors become nervous over the security of their loans and require debtors to speed up liquidation under threat of foreclosure. Each time collateral or real property is sold out, the market value of all other security is depreciated. Thus we have a vicious circle, familiar to all.

Happily there is an end to this, as to everything. The time comes, and may soon be here, when enough people are free of debt to start a wave of buying. The moment that the consumption of goods shows a definite upturn, creditors will relax, new loans will be made, and we will be in a new cycle which will continue until we again overreach ourselves.—*Through the Meshes.*

Portraits on Currency

The following table lists the portraits that appear on the various denominations of our paper currency:

One Dollar	Washington
Two Dollars	Jefferson
Five Dollars	Lincoln
Ten Dollars	Hamilton
Twenty Dollars	Jackson
Fifty Dollars	Grant
One Hundred Dollars	Franklin
Five Hundred Dollars	McKinley
One Thousand Dollars	Cleveland
Five Thousand Dollars	Madison
Ten Thousand Dollars	Chase

Clicks from the Rails

Beauty Parlor Equipment

was in demand by Ohio Valley railroads after the recent floods. No, it was not to improve the looks of the property after the waters had subsided. Some bright mind suggested that an electric hair-dryer would come in handy for doctoring up the signal relays which had been submerged. Tests proved the success of the method and all available stocks of hair-drying apparatus were purchased and put to work.



Expert Locomotive Handling

was required for the delicate job of rescuing a light delivery truck from the main tracks of the Troy Union Railroad one day last winter. The truck driver, thinking there was pavement beneath the deep snow, had driven up the tracks, becoming stranded when the truck axles were "hung up" on the rails, and the wheels spun helplessly in mid-air. As the *Green Mountain Flyer* was due in a few minutes, all signals were set at "stop," New York Central engineer Henry Heil inched his locomotive to within a yard of the auto, a tow chain was strung between car axle and locomotive, and the truck was hauled back onto the pavement.



Braddock Met Louis

recently in an encounter which lasted while the *North Coast Limited* was crossing half the American continent, from St. Paul, Minn., to Seattle, Wash. Jim Braddock is world heavyweight champion and Joe Louis is a much-discussed contender, but the Joe Louis whom Braddock met on the *Limited* is Pullman porter Joe Louis, with 29 years' service. The coincidence was so pat that the two were photographed together in every sizeable community along the way. This Louis refused to pick the winner if Braddock and the Louis ever meet in the ring, although he dubbed Braddock "a fine fellow."

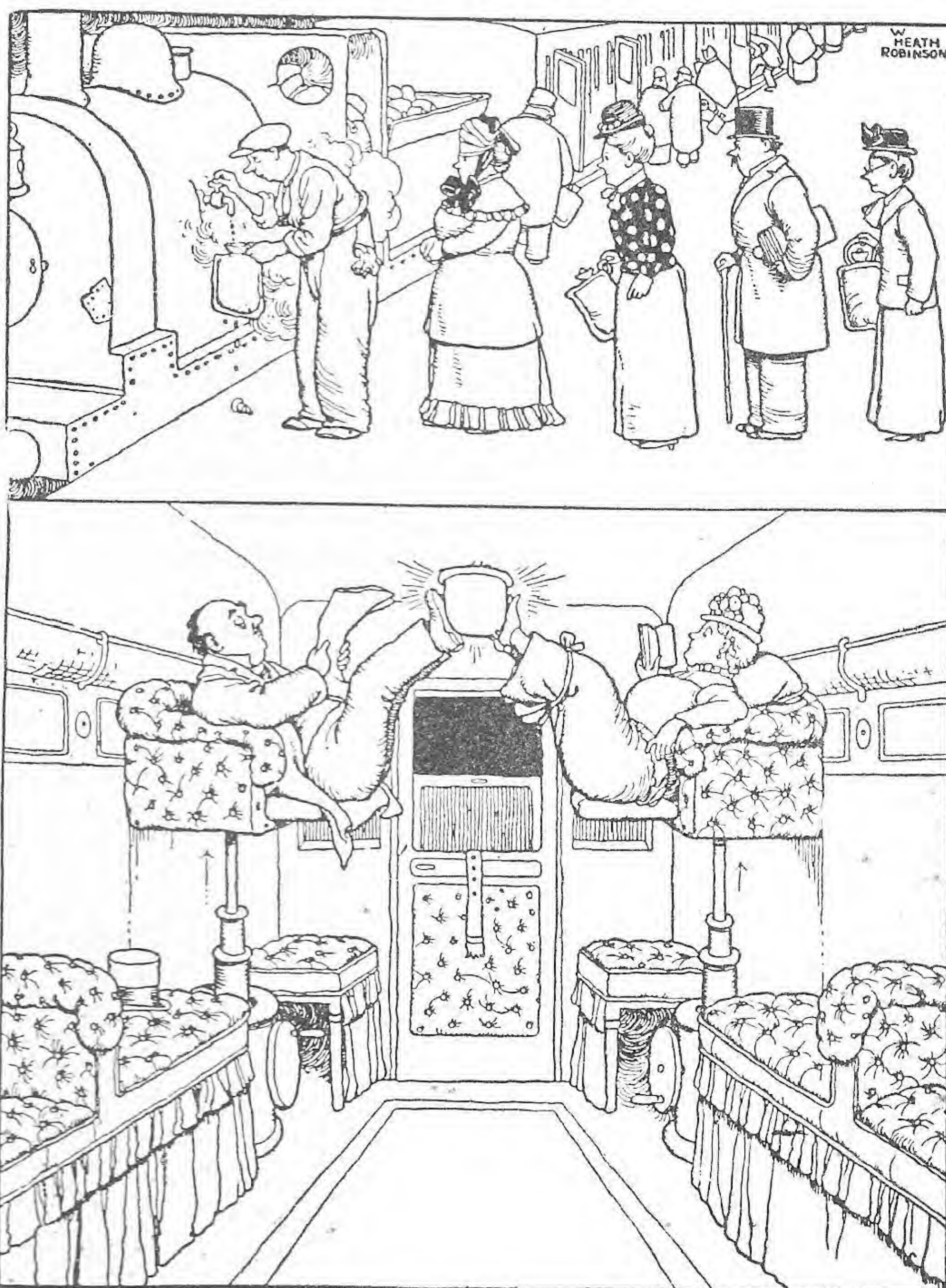
Their Hose Too Short,

fire fighters of Endicott, N. Y., were powerless when someone telephoned the Central Fire Station to report a blaze in a gondola loaded with coal. The Erie agent called the Binghamton roundhouse, a locomotive was rushed to the scene, the car was pulled to the hydrant, and the blaze was quickly extinguished.

Passengers Marooned

on a Pennsylvania train at Huntingdon, Pa., by flood conditions were kept warm and well-fed for four days through the efforts of the conductor, station agent and steward, the latter rationing out drinking water brought 6 miles to the train. A borrowed radio brought latest news of conditions elsewhere.

Foot Warmers



Courtesy Railway Gazette

Some time ago this column recalled a quaint Scottish invention by means of which the interiors of railway cars were to have been warmed by the use of the heat from the oil lamps which furnished illumination. The Great Western Railway recently illustrated the above interesting methods of overcoming cold feet prior to the introduction of modern steam heating.

Tolerance

ONE of the most valuable things that I ever learned was to work in harmony with men whose personalities and views I do not like. Too many people carry their private likes and dislikes into the business world.—ANON.